163928

ON-SCENE COORDINATOR'S REPORT

CERCLA REMOVAL ACTION

GENERAL DIE CASTING SITE

DETROIT, MICHIGAN

SITE ID: #LQ

DELIVERY ORDER NO.: 7460-05-217

REMOVAL DATES: MARCH 13, 1992 - MARCH 11, 1993

Emergency and Enforcement Response Branch
Office of Superfund
Waste Management Division
Region V
United States Environmental Protection Agency

EXECUTIVE SUMMARY

Site/Location: General Die Casting, Detroit, Wayne County, MI
Removal Dates: March 13, 1992 - March 11, 1993.

INCIDENT DESCRIPTION:

This site was an abandoned zinc die casting and electroplating facility located in Detroit, Wayne County, Michigan.

The removal action was taken to mitigate the threats to human health and the environment posed by the presence of corrosive liquids, cyanide-contaminated solids and liquids, plating wastes, and laboratory chemicals. These materials posed threats through the potential for acidic liquids, located in tanks above a floor containing cyanide-bearing sludge, to leak and contact the sludge resulting in the formation of toxic hydrogen cyanide gas. Other threats existed from direct contact by the public with the hazardous materials and potential release from deteriorating drums, tanks, and vats.

ACTIONS TAKEN:

The U.S. EPA began a removal on March 13, 1992. The following emergency removal activities were performed: 1) site wastes were characterized by sampling all tanks, vats, floor solids, and sumps; 2) compatibility groups were developed for corrosive liquids; 3) the site was stabilized by securing hazardous waste solids in containers according to compatibility analysis and removing corrosive liquids; and 4) the off-site treatment of acid, caustic, flammable, and cyanide-bearing liquid wastes. Laboratory chemicals and other plating-related chemicals were identified and secured in drums according to chemical type. A transformer cooling oil spill was cleaned up, and the remaining oil in the transformers transferred to a tank in the facility and later disposed of.

Approximately 6,230 gallons of liquids (acids, bases, flammable, cyanide-bearing) were transported off site for treatment. Approximately 30 cubic yards of hazardous waste solids were shipped off site for treatment and disposal, and 350 gallons of transformer oil was transported off site for fuels blending. All actions taken were consistent with the National Contingency Plan.

The removal was completed on March 11, 1993, at an estimated cost under control of the OSC of $138,544.38, of which $99,772.35 were for the Emergency Response Cleanup Services (ERCS) contractor. The On-Scene Coordinator was Peter F. Guria.

Peter F. Guria, On-Scene Coordinator
Emergency and Enforcement Response Branch
United States Environmental Protection Agency
Region V

1/5/94
Date

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Office of Superfund, U.S. EPA, Region V

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Site ID #: LQ Delivery Order #: 7460-05-217

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Emergency and Enforcement Response Branch
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* Portions of these OSC Report Appendices may contain confidential business information or enforcement-sensitive information and must be reviewed by the Office of Regional Counsel prior to release to the public.

* Note that certain files for this site are maintained elsewhere by EERB; these appendices are those files maintained by the OSC during the removal action.

1.0 SUMMARY OF EVENTS

1.1 Location/Initial Situation

The General Die Casting (GDC) site is an abandoned zinc die casting and electroplating facility located at 13700 Mount Elliott, Detroit, Wayne County, Michigan. The site is situated in an urban/industrial area south of the intersection of McNichols and Mt. Elliott Avenues. The site is bordered on the west by Mt. Elliott Avenue, on the east by the Grand Trunk Western Railroad, and on the north and south by light industrial facilities (Figure 1). The closest residential area is approximately one-quarter mile to the west and north. A 6-foot chain link fence topped with barbed wire surrounds a truck turnaround area east of the building, separating the property from the railroad.

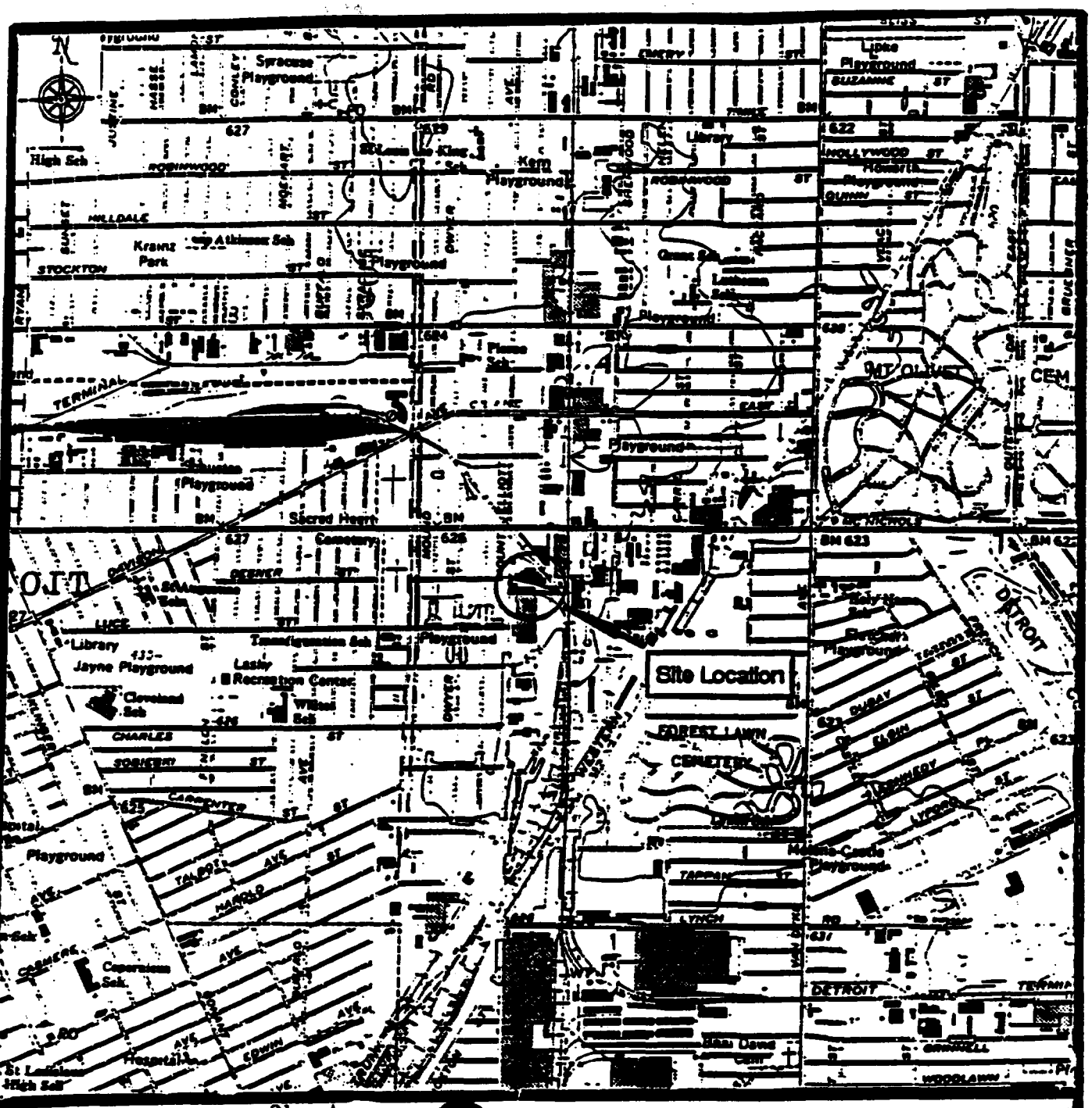
The GDC site is a 21,250-square-foot building located on 0.6 acres (Figure 2). The facility consists of a two-story office area connected to a single-story building that includes the electroplating process area (west room) and the waste treatment area (east room). A laboratory and storage room are located in the waste treatment area. A fenced area used as a truck turnaround, loading, and storage area is located behind the building (Figure 2).

The site topography is flat. The closest natural body of water is the Detroit River, which is located approximately 6 miles to the southeast and flows south toward Lake Erie. Drinking water in the area is provided by the City of Detroit.

1.2 Previous Actions/Site History

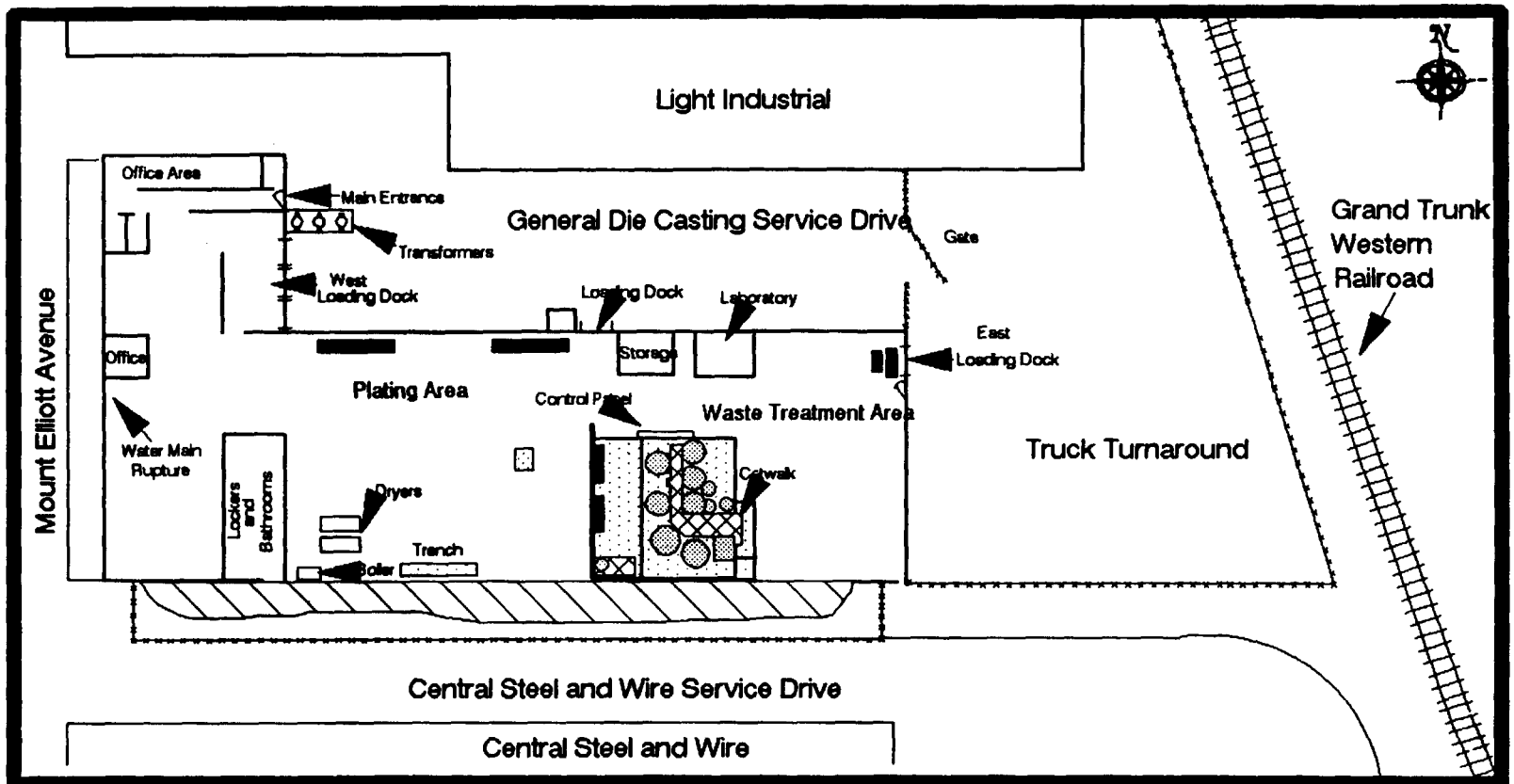
The Wolverine Die Casting Corporation initially operated the facility at 13700 Mt. Elliott Avenue from the mid-1950s until 1969, when Noranda Mines Ltd. (Norandex, Inc.), Ontario, Canada, purchased Wolverine Die Casting. Wolverine Die Casting continued to operate the facility until July 1970, when the operation was sold to the General Die Casting Company (General Die Casting). General Die Casting manufactured and electroplated zinc die castings at the facility from August 1970 until the facility's closure in December 1988. In January 1989, William R. Aikens authorized his attorney to enter into a contract for the property. Mr. Aikens is the President of Spartan Metal Finishing (Spartan), 5400 East Nevada, Detroit, Michigan.

The Toxico Corporation (Toxico), Southfield, Michigan, conducted an environmental assessment on August 31, 1988, on behalf of General Die Casting in preparation for a request for Clean Closure before the property sale to Aikens. The Toxico assessment recommended additional sampling that it then conducted on September 19, 1988, to evaluate the extent of contamination of the impacted portion of the property on the south side of the GDC building. The contamination, as Toxico was informed, was believed to have resulted from seepage of cutting oil through the concrete wall and floor of the building. The Central Steel and Wire Company (CS&W), 13400 Mt. Elliott, owns this section of property south of the GDC building. Toxico's analytical report dated January 24, 1989, revealed the presence of polynuclear aromatic



United States
Environmental Protection Agency
Region V

TITLE: Site Location Map		FIGURE #: 1
SITE: General Die Casting		SCALE: 1" = 24,000 FT
SOURCE/DATE: April 24, 1992 USGS 7.5 Minute Series Highland Park, MI Quadrangle, 1968	CITY: Detroit STATE: Michigan	TDD #: T05-9203-009



LEGEND

- Tanks
- Containment Areas
- Fencing
- Backfilled Excavation
- Vats

SOURCE/DATE
Ecology & Environment, Inc., April 29, 1992

United States Environmental Protection Agency

Region V

TITLE	Site Map	FIGURE #	2
SITE	General Die Casting	SCALE	Not to Scale
CITY	Detroit	STATE Michigan	TDD # T05-9203-009

hydrocarbons (PNAs); however, only priority pollutant analysis was performed on the soil samples collected as the contamination was believed to have been from the cutting oil.

CS&W hired Gabriel Laboratories, Ltd. (Gabriel), Chicago, Illinois, to conduct an independent assessment of the property on July 25, 1989, to determine the extent of contamination on their property. Analytical results of surface soil samples collected from the area south of the GDC building were reported on September 8, 1989, and indicated elevated levels of PNAs and heavy metals.

On July 5, 1990, Toxico submitted a draft work plan to the Michigan Department of Natural Resources, Emergency Response Division (MDNR-ERD), Livonia, Michigan, for soil remediation of the area south of the GDC building. Based on information provided by Toxico that the only contamination at the GDC facility was PNAs, MDNR approved the work plan. Excavation of the contaminated soil south of the GDC building began on or before July 26, 1990.

Gabriel collected soil and surface water samples on July 26, 1990, during Toxico's excavation of contaminated soil. Analytical results revealed cyanide levels ranging from 0.43-250 milligrams per kilogram (mg/kg) in the soil and between 75-1700 milligrams per liter (mg/l) in ponded surface water from the area of excavation. Analysis of additional samples collected by Gabriel from the excavation area between August 8 and 10, 1990, revealed cyanide levels ranging from 12 mg/kg to 1,673 mg/kg.

On August 11, 1990, soil and surface water samples were collected by MDNR to confirm Gabriel's July 26, 1990, soil and water sample results. Analytical results indicated cyanide levels ranging from 87 to 220 mg/kg in the soil and 755 mg/l in ponded surface water within the excavated area. Additionally, elevated levels of nickel, copper, and zinc, all of which are common materials used in a zinc die cast plating facility, were also present in the soil samples.

In a letter dated November 27, 1990, MDNR-ERD denied the Clean Closure request submitted by General Die Casting on October 15, 1990, for the facility. MDNR directed General Die Casting to conduct additional investigative and corrective actions to determine the extent of contamination in soil and groundwater throughout the site, including the adjacent properties; address any contamination present; and submit a remedial action plan to achieve appropriate cleanup criteria.

On December 21, 1990, United States Environmental Protection Agency (U.S. EPA) On-Scene Coordinator (OSC) Robert Bowlus and the Technical Assistance Team (TAT) performed a site assessment of the GDC facility to evaluate threats posed to human health and the environment. The site assessment report, dated January 18, 1991, described the site conditions from the December 1990 assessment (see Appendix 3-A). Upon arrival at the facility, the TAT encountered personnel representing the current owner, Spartan, removing vents and fan units from the roof

and plating equipment from within the building to the outside. Organic vapor analyzer (OVA) readings obtained by the TAT in the western portion of the building were 20 to 30 units above background. Methane from an extinguished furnace pilot was suspected as the cause. Spartan and General Die Casting personnel ignored the warnings given by the TAT concerning the impure air and remained in the building for the duration of the inspection without appropriate respiratory protection.

Approximately 22 drums and 12 tanks containing liquid and solid plating treatment waste that were suspected of containing heavy metals and cyanide were encountered throughout the building's interior. The waste treatment containment area was covered with 2 to 3 inches of green, flaky sludge. A number of vats containing solid material were also observed in various locations throughout the abandoned facility. On the south side of the plating area, a trench, 3 feet in depth, was observed near two large mechanical dryers and a boiler. The TAT also observed that soil on the south side of the building had been excavated and removed from the site. It is unknown whether this material was properly disposed of.

On May 3, 1991, the TAT accompanied a member of the Office of Regional Counsel (ORC) on a visit to the site. Richard Shirley of General Die Casting and William Aikens of Spartan accompanied the team. During this visit, air monitoring of the building showed no readings above normal background concentrations; however, the TAT noted that the 22 drums and some of the equipment identified during the site assessment had been removed. The waste treatment tanks and vats remained on site, still containing significant amounts of liquids, sludges, and solids. Most of the green flaky sludge noted during the site assessment had been removed from the waste treatment containment area. The excavated area south of the building had been backfilled and secured with a chain link fence. Information regarding the removal of drums and treatment area sludge and the level of contamination of soil at the base of the excavation prior to backfill had not been made available by General Die Casting despite repeated requests by U.S. EPA.

On January 28, 1992, a representative of CS&W contacted the U.S. EPA Emergency and Enforcement Branch (EERB), Response Section I, Grosse Ile, Michigan, to report that an unknown liquid was flowing from the southwest wall of the GDC building. The liquid was flowing across the area that had previously been identified as containing cyanide in the soil and across CS&W property before entering the City of Detroit combined sewer system. U.S. EPA mobilized the TAT to perform an emergency response and site re-assessment at the GDC site. U.S. EPA OSCs Robert Bowlus and Peter Guria contacted William Aikens who allowed the OSCs and the TAT access to the building. The liquid flowing from the building was traced to a broken 8-inch water main connected to the fire system of the building. The City of Detroit Water and Sewer Department was contacted and shut off the water main leading to the building. U.S. EPA and the TAT then inspected the rest

of the facility. The TAT noted that the condition of the site was unchanged from the May 3, 1991, inspection. OSC Guria then directed the TAT to prepare a sampling plan to determine the amount and type of hazardous substances present in the building and perform a site re-assessment to update the threat to the public health and the environment.

On February 10, 1992, the TAT returned to the site to implement the sampling plan and conduct a re-assessment of site conditions. The TAT and OSC Guria were granted access to the building by Spartan representative, William Aikens. Eleven tanks suspected of containing plating wastes were observed in the east room of the building. All tanks of liquid and/or sludges were suspected to contain heavy metals and possibly cyanide. Samples were collected from a number of these tanks and from residues and sludges found in sumps and containment areas. All sampling was conducted based on sampling plan locations (shown in Figure 3 of report dated March 1992 [in Appendix 3-A]).

During the sampling, General Die Casting representative Bob Murray arrived to provide information concerning the past uses of different tanks and areas of the facility. Murray informed the TAT that most tanks in the treatment area likely contained "F006 waste," the designation in 40 C.F.R. § 261.31 for waste water treatment sludges from an electroplating operation that contain chromium, cadmium, and cyanides. He also noted that the portion of the south wall where staining was visible on the exterior of the building had served as one wall of a cyanide copper solution spill containment structure surrounding the plating area in the west room. None of the containment areas were lined to prevent seepage of spillage from tanks through the concrete slab and cement block. Separation of the concrete slabs and building walls was evident in many areas of the building and containment areas, including waste treatment. Cracking of the slab and block walls was also apparent. It was the opinion of the OSC and the TAT that the walls and floor of the building would not contain a spill of the existing tank contents.

The TAT attempted to collect samples of the fill and underlying soil in the excavated area on the south side of the building. Adverse weather conditions and frozen soil precluded the sampling with the equipment available. Sampling of this area was therefore suspended.

The samples from the re-assessment were sent to Clayton Environmental, 22345 Roethel Drive, Novi, Michigan, for total heavy metal, cyanide, and pH analysis. Analytical results of samples collected from the tanks, floors, and collection sumps revealed elevated levels of heavy metals and cyanide concentrations greater than 600,000 parts per million (ppm). Samples from several of the tanks containing liquid wastes indicated corrosive pH values and high concentrations of chromium, characteristics of the corrosive wastewater commonly associated with plating operations.

Details of the TAT site re-assessment can be found in the site assessment report dated March 1992, in Appendix 3-A.

1.3 Threats to Public Health and the Environment

The documented conditions at the GDC site posed an imminent and substantial threat to public health and the environment based upon the following criteria listed in Paragraph (b)(2) of 40 C.F.R. § 300.415 of the National Contingency Plan (NCP):

i) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The facility presented this threat as a result of the presence of reactive solids and corrosive liquids found throughout the building. Analytical results of solid and liquid samples collected from tanks, floor, and floor collection sumps had revealed the presence of cyanide at levels above 600,000 ppm and strong acids with pH values of less than 1.0. The tanks containing acids and high concentrations of chromium exhibited the characteristic of corrosivity under the Resource Conservation and Recovery Act (RCRA), 40 C.F.R., § 261.22, and are a listed waste under RCRA, 40 C.F.R. § 261.31 (F006). The cyanide solids exhibited the characteristic of reactivity under RCRA, 40 C.F.R., § 261.23.

Two tanks containing strong acids had been observed on platforms above the cyanide-contaminated floor material. A release of the approximately 900 gallons of corrosive, hazardous liquids identified on site would spill into the reactive, cyanide-bearing sludge located in the containment areas and could have caused the formation of toxic hydrogen cyanide gas. A cloud of this gas would not have been contained within the building. Unprotected humans and animals close to the facility could likely have been exposed to the cloud.

The corrosive liquids present also posed a direct contact threat to persons obtaining unauthorized access to the facility. The building was secured but access to the inside could be gained by humans or animals if desired. Observations from site assessments indicated that vandalism and unauthorized use of the abandoned building had occurred since the cessation of operations at the facility.

ii) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers that may pose a threat of release;

The facility presented this threat due to the on-site storage of 2,000 gallons of potentially hazardous solutions. Of these solutions, approximately 900 gallons had pH values less than 1.0, indicating the presence of a characteristic corrosive waste under RCRA, 40 C.F.R. § 261.24. The rapidly deteriorating roof had collapsed in several areas of the building. Continued deterioration of the building and

roof could have resulted in a compromise of the tanks' integrity and a release of their contents. Damaged dikes surrounding the waste treatment area, cracked cinder block walls, and the cracked and broken concrete floor would not have contained a release of the tanks' contents. Evidence of trespass and vandalism had also been observed within the facility. Further unrestricted access by vandals could have increased the potential for a release of material from the tanks.

iii) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

The site presented this threat due to the concentrations of heavy metals and cyanide in the soil south of the GDC building. In analytical results, MDNR and Gabriel sampling of the area south of the building have documented significant levels of nickel, copper, zinc, and other metals, which are commonly utilized in the process of plating zinc die castings. Analytical results have also revealed cyanide concentrations in the soil at 250 mg/kg and 1,673 mg/kg. Sampling of precipitation accumulated in this area contained cyanide levels ranging between 75 and 1,700 mg/l. No controls for surface water run-off were present at the site to prevent migration of contaminants off site during periods of increased precipitation.

iv) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

The building has been abandoned since 1988 and continues to deteriorate from exposure to the natural elements. The roof had collapsed in several areas of the building and large holes in the ceiling had been created through removal of ventilation equipment allowing precipitation to enter. In the absence of berms or other controls, the permeability of the south wall of the building and periods of heavy precipitation could have also allowed contaminants present in the soil located to the south of the GDC building to continue to have migrated off site.

v) The availability of other appropriate Federal or State response mechanisms to respond to the release;

Although the aforementioned hazards posed an imminent and substantial threat to human health and the environment, MDNR did not have the necessary funding to address the time-critical situation presented by the site.

1.3.1 Natural Resource Damage

The GDC site is located in an industrial/urban area of Detroit and is bordered on the east by the Grand Trunk Western Railroad (Figure 1). The site is bordered by light industrial facilities on the north and south. The nearest body of water is the Detroit River, approximately 6 miles to the southeast. The release of water from a broken water

main in the facility on January 28, 1992, drained into the City of Detroit combined sewer system. No natural resource areas were identified as being impacted by the site, and no formal study of natural resource damage was conducted by either the U.S. Department of the Interior or MDNR.

1.4 Attempts to Obtain a Response by Potentially Responsible Parties

In January 1989, William R. Aikens, owner of Spartan Metal Finishing, authorized his attorney to enter into a contract dated January 11, 1989, with Richard Shirley, owner of General Die Casting Company, for the General Die Casting facility. Initially, Shirley and Aikens were identified as Potentially Responsible Parties (PRPs). The U.S. EPA issued General Notice letters and Information Requests to Aikens and Shirley. Based on information gathered during the May 1991 TAT site visit, a Unilateral Administrative Order was issued on July 3, 1991, to Shirley and Aikens to perform a remediation of the GDC site. Shirley and his counsel met with the U.S. EPA and recommended that other PRPs who may be equally responsible for the conditions at the site be pursued. Subsequently, Noranda Mines Ltd. (Norandex, Inc.) of Ontario, Canada, was identified as a PRP and was sent a General Notice letter in January 1992. After noncompliance to the Administrative Order by the PRPs, a site re-assessment was conducted in February 1992 by U.S. EPA and the TAT. Based on the results of the samples collected during the re-assessment, an emergency site stabilization and removal was necessary to remediate the threats discussed in Section 1.3. After U.S. EPA initiated removal actions, GDC contacted U.S. EPA and indicated it would be willing to enter into an Administrative Order by Consent (AOC) to complete the removal. Negotiations ended unsuccessfully, and in February 1993, a Unilateral Administrative Order was issued to three PRPs. GDC advised U.S. EPA that it was now willing to perform the removal voluntarily. GDC signed an AOC for the remaining removal tasks in March 1993.

1.5 Chronological Narrative of Response Actions Taken

On March 13, 1992, a removal action was initiated under a $50,000 verbal authority by the Chief of EERB to stabilize and secure threats posed at the GDC site. An Action Memorandum for $393,610 was signed by the Director, Waste Management Division, on April 23, 1992. The site stabilization and removal was conducted by the ERCS Contractor, International Technologies Environmental Programs Corporation (ITEP) of Cincinnati, Ohio, under Delivery Order #7460-05-217, who subcontracted the actual site work to OH Materials Company (OHM) of Findlay, Ohio.

For ease of discussion, this section is divided into 14 sections, each of which corresponds to a major activity conducted during the site stabilization and removal. These activities are also represented on a time line which illustrates the sequence of events (Attachment A).

1.5.1 Safety and Support Facilities

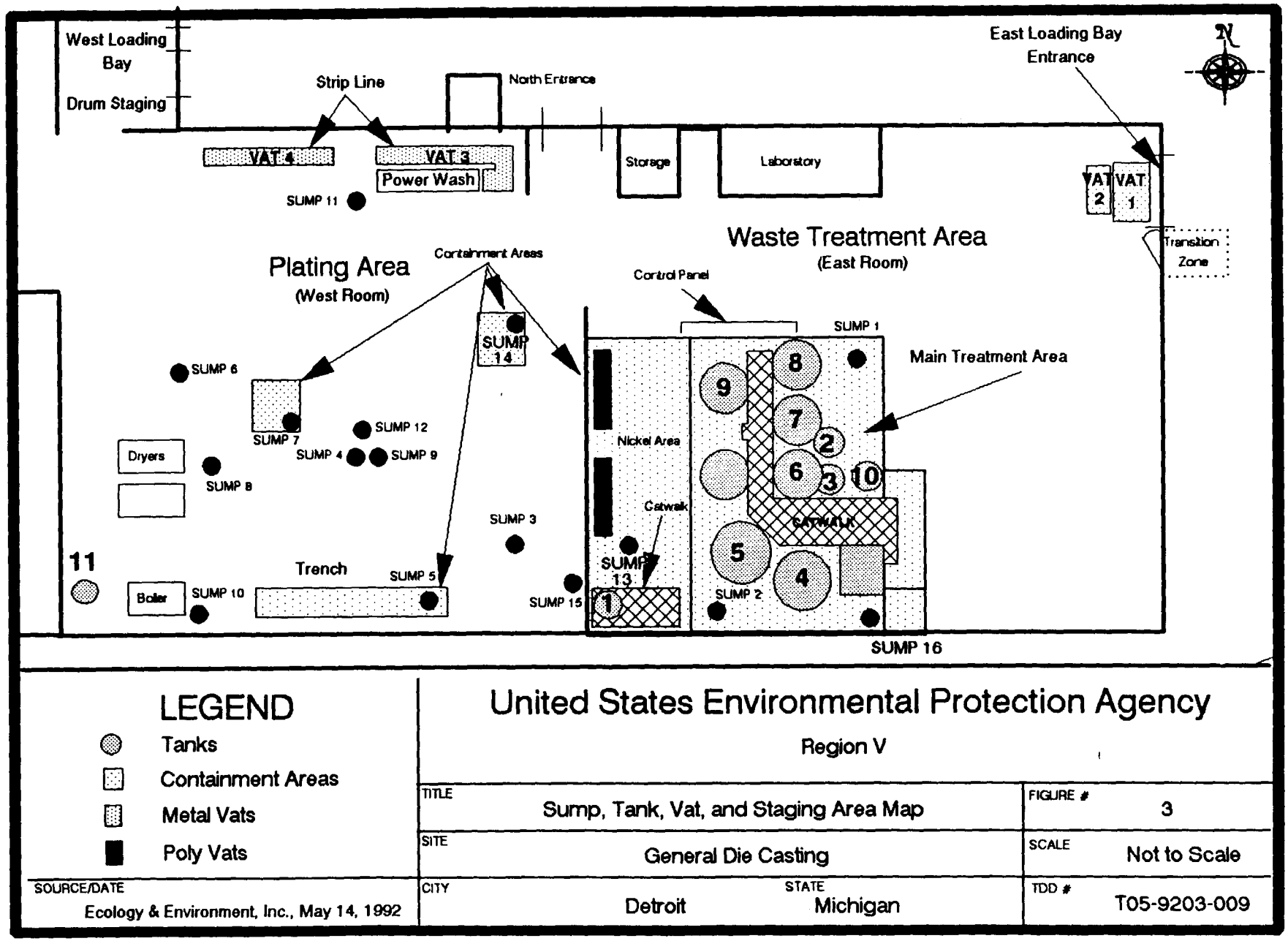
On March 13, 1992, the ERCS subcontractor, OHM mobilized to the site to conduct immediate stabilization measures on materials posing the greatest threat of release. These activities included establishing site security and drumming the green crystalline material and sludge (found to contain 600,000 ppm of cyanide from February 1992 site re-assessment sampling results) from the two containment areas in the east room. Full mobilization occurred on March 16, 1992, and a safety plan was developed and adopted between ERCS, TAT, and U.S. EPA. An office trailer was mobilized on March 16, 1992, as a command post. Work and transition zones were delineated and completed by March 18, 1992 (Figure 3).

The level of protection was established at level B inside the building until the potential for toxic hydrogen cyanide gas formation, due to the acidic liquids possibly leaking onto the cyanide-bearing sludge, was eliminated. Air monitoring was conducted continuously with cyanide and hydrogen sulfide monitoxes and upon entry each morning with a combustible gas indicator (CGI) and cyanide monitox. The CGI and cyanide monitox were used each morning to check the building for cyanide gas and methane. Methane was a concern due to the past problem of methane leakage mentioned in Section 1.2. After the acidic liquids were removed on March 21, 1992, level C was established as the level of protection inside the building except for: 1) work conducted in tanks, sumps, or trenches (level B); and 2) when air monitoring or the OSC approved upgrades or downgrades in the levels of protection.

A 50-kilowatt portable generator was mobilized as a power source for the office trailer and portable lights inside the building. As part of the set-up of the transition zone, OHM personnel swept the cement area in front of the east loading bay entrance. A black, powdery material, believed to be carbon used for filtration of plating solutions, was observed on the ground over a wide area of the truck turnaround. Two drums of the carbon material were collected. Inside the building, separate areas were created for staging of drums and debris. A drum staging area was established in the room west of the loading bay (Figure 2).

1.5.2 Tank Sampling

Because the main concerns at the site were the liquids in the tanks and solids on the floor and in the sumps, sampling of the tank liquids was among the first activities conducted on March 13, 1992, to expedite disposal. All sampling was conducted in Level B protection. The OHM crew sampled ten tanks. The TAT estimated the volumes of liquid in the tanks and performed a hazard categorization of chemicals on each of the tank's contents (see results of hazard categorization in Table 1). Samples from each of the ten tanks were sent on March 13, 1992, to an off-site laboratory for compatibility and disposal analysis. Analytical results were received on March 19, 1992. Seven liquid compatibility groups were developed.



LEGEND

- Tanks
- Containment Areas
- Metal Vats
- Poly Vats

SOURCE/DATE: Ecology & Environment, Inc., May 14, 1992

United States Environmental Protection Agency

Region V

TITLE: Sump, Tank, Vat, and Staging Area Map		FIGURE #: 3
SITE: General Die Casting		SCALE: Not to Scale
CITY: Detroit	STATE: Michigan	TDD #: T05-9203-009

Table 1
TANK AND SUMP HAZARD CATEGORIZATION DATA

General Die Casting Site
Detroit, Michigan
03/13/92 - 03/11/93

	OHM ID NUMBER	VOLUME (GALLONS)	CYANIDE (PPM)	pH	COMMENTS
TANKS	1	64	ND	< 1	
	2	188	ND	2	
	3	53	ND	2	
	4	1,130	< 1	9	
	5	1,356	< 1	9	
	6	577	ND	1	
	7	294	ND	10	
	8	368	ND	9	
	9	565	> 30	9	
	10	259	ND	7	
	11	45	ND	9	Comb. w/ Tank 8
SUMPS	1	NM	> 30	9	Comb. w/ Tank 9
	2	NM	> 10	11	Comb. w/ Tank 9
	3	NM	1	9	Comb. w/ Tank 4
	4	NM	ND	6	Comb. w/ Tank 8
	5	NM	10	10	Comb. w/ Tank 9
	6	NM	ND	6	Comb. w/ Tank 8
	7	NM	ND	7	Comb. w/ Tank 8
	8	NM	ND	6	Comb. w/ Tank 8
	9	NM	> 10	9	Comb. w/ Tank 9
	10	NM	ND	10	Comb. w/ Tank 8
	11	NM	ND	3	Comb. w/ Tank 2
	12	NM	ND	9	Comb. w/ Tank 8
	13	NM	ND	1	Comb. w/ Tank 3

PPM = Parts per million
NM = Not measured
Comb. w/ = Combined with
ND = Not detected

1.5.3 Floor and Sump Material Characterization and Consolidation

The green crystalline solid and sludge from the floor and sumps #1, #2, and #16 in the main treatment area and from the floor of the nickel treatment area were shovelled into separate drums beginning on March 13, 1992 (Figure 3). Four drums were generated from the floor material of the main treatment area, and three drums were generated from the nickel area floor material. The floors were scraped, and on March 17, 1992, the containment area floors in the east room were sprayed with a sodium hypochlorite solution to eliminate any remaining cyanide.

The TAT conducted a reconnaissance of the building, sampled sumps that contained liquids, and performed hazard categorization of materials in the samples. There were approximately 16 sumps in the east and west rooms. The sump liquids were bulked into tanks according to on-site compatibility analysis (see results in Table 1).

A number of sumps contained solids or a combination of solids and liquids. Solids from the sumps in the main treatment and nickel areas were bulked in the drums containing floor materials from the respective area. Solid materials from sumps in the west room were shovelled into separate drums. The TAT performed hazard categorization of the materials in the solids from several sumps and vats which contained small quantities of solid material. The solids were then bulked in drums according to the results of on-site categorization analysis (see results in Table 2). Sump cleaning generated a total of 14 drums of solids (Figure 4).

1.5.4 Waste Characterization and Consolidation

During the cleanup of the floors of the containment areas, a plastic bag of white solid in a deteriorated fiber drum was discovered in the main treatment area. A number of other small containers ranging in capacity from 1 quart to 5 gallons, one 30-gallon drum, and several plastic bags of solid material were discovered throughout the building. A number of these containers were found in the facility's laboratory located north of the main treatment area. The TAT performed hazard categorization of chemicals in these materials and used the results to determine waste stream consolidation (see results in Table 3). The materials from these containers were bulked by waste stream (see bulking scheme for small containers in Table 4). Seven drums were generated from the bulking of the container materials.

1.5.5 Dismantling Polyvinyl Chloride (PVC) Piping System

After the solid material was removed from the floors of the main treatment and nickel treatment areas, two empty polyethylene (poly) vats and one empty poly tank from this area were restaged on the south wall of the east room. An empty 2,000-gallon poly tank from the main treatment area was restaged near the trench in the west room to hold decontamination water (see Section 1.5.7 below). Polyvinyl chloride

Table 2
SUMP HAZARD CATEGORIZATION DATA

General Die Casting Site
Detroit, Michigan
03/13/92 - 03/11/93

SUMP #	CYANIDE (PPM)	pH	SOLUBILITY (IN WATER)	COMMENTS
3	ND	6	S	Combined with Sumps 6, 7, and 8
4	3	5	S	Combined with Sump 10
6	ND	5	PS	Combined with Sumps 3, 7, and 8
7	ND	7	PS	Combined with Sumps 3, 6, and 8
8	ND	5	PS	Combined with Sumps 3, 6, and 7
10	> 30	9	S	Combined with Sump 4
14	> 230	10	S	Combined with Sump 4, 10, and 15
15	10	10	S	Combined with Sump 4, 10, and 14

ABBREVIATIONS:

PPM = Parts Per Million
ND = Not Detected
S = Soluble
PS = Partially Soluble

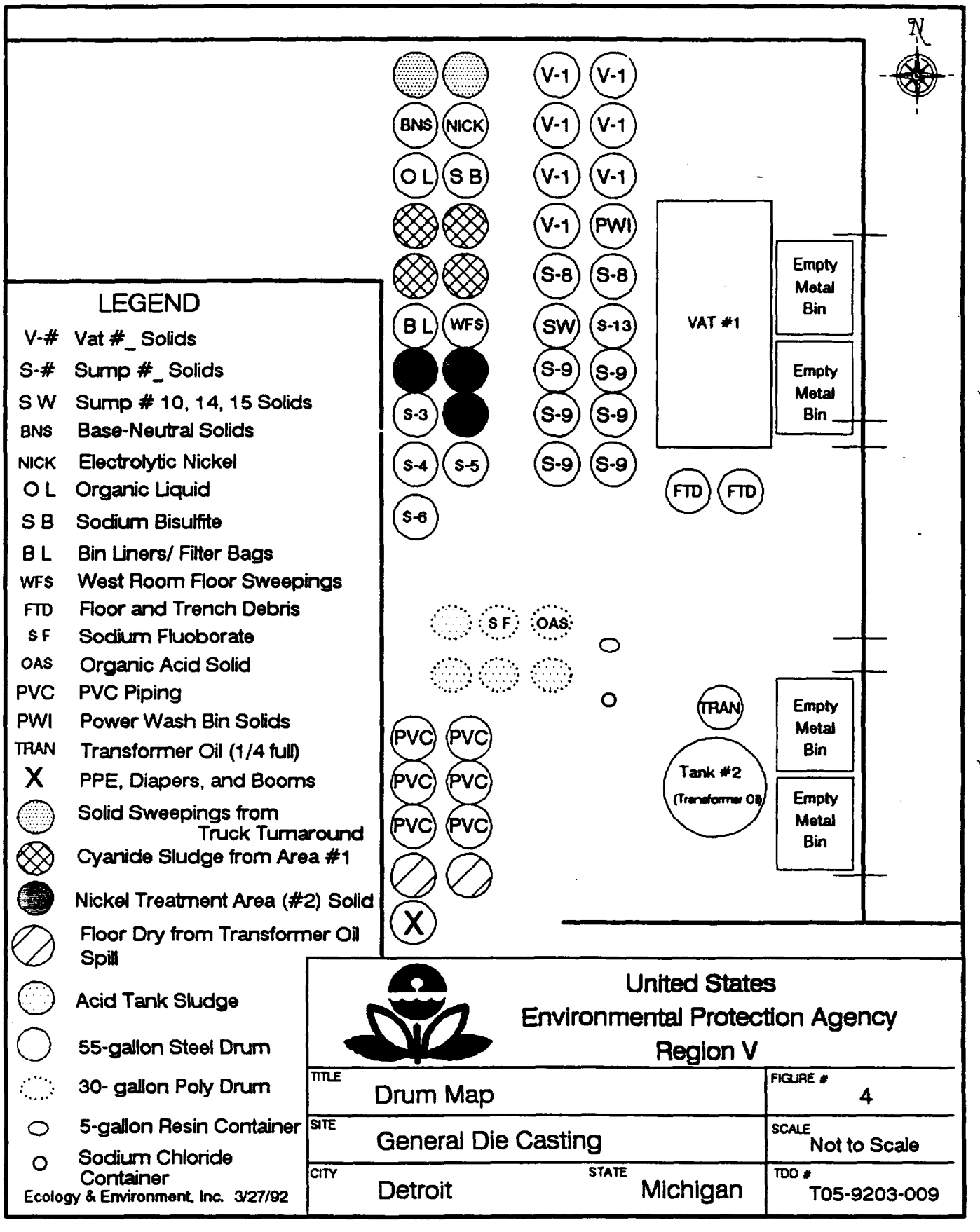

N
BNS
NICK
O L
S B
B L
WFS
S-3
S-4
S-5
S-6
V-1
PWI
S-8
SW
S-13
S-9
VAT #1
Empty Metal Bin
FTD
S F
OAS
PVC
TRAN
Tank #2
(Transformer Oil)
X
LEGEND
V-# Vat #_ Solids
S-# Sump #_ Solids
S W Sump # 10, 14, 15 Solids
BNS Base-Neutral Solids
NICK Electrolytic Nickel
O L Organic Liquid
S B Sodium Bisulfite
B L Bin Liners/ Filter Bags
WFS West Room Floor Sweepings
FTD Floor and Trench Debris
S F Sodium Fluoborate
OAS Organic Acid Solid
PVC PVC Piping
PWI Power Wash Bin Solids
TRAN Transformer Oil (1/4 full)
X PPE, Diapers, and Booms
Solid Sweepings from Truck Turnaround
Cyanide Sludge from Area #1
Nickel Treatment Area (#2) Solid
Floor Dry from Transformer Oil Spill
Acid Tank Sludge
55-gallon Steel Drum
30- gallon Poly Drum
5-gallon Resin Container
Sodium Chloride Container
Ecology & Environment, Inc. 3/27/92
United States
Environmental Protection Agency
Region V
TITLE Drum Map
FIGURE # 4
SITE General Die Casting
SCALE Not to Scale
CITY Detroit
STATE Michigan
TDD # T05-9203-009

Table 3
SMALL CONTAINER HAZARD CATEGORIZATION DATA

General Die Casting
Detroit, Michigan
03/13/92 - 03/11/93

SAMPLE ID	WATER SOL.	pH	OX	CYANIDE (PPM)	CONTAINER SIZE	MATERIAL (if known)
E-1	I/L	7	-	-	55 gallon	Lubricating coolant
E-2	I/L	7	-	-	5 gallon	
E-3	S	3	-	-	5 gallon	
E-4	I/L	7	-	-	5 gallon	Polyurethane
E-5	WT	7	-	-	50 lb. bag	
E-6	I/L	1	-	-	10 lb. bag	
E-7	PS	7	-	-	10 lb. bag	
E-8	S	10	-	-	1 gallon	
E-9	S	1	-	-	< 1 quart	
E-10	S	1	+	-	4000 ml	
E-11	S	1	+	-	< 1 quart	
E-12	S	11	-	-	1 gallon	
E-13	S	7	-	-	< 1 quart	
E-14	S	1	++	-	1 quart	
E-15	S	1	-	-	< 1 quart	
E-16	WT	8	-	-	1 quart	Poly Precipitator
E-17	S	8	-	-	< 1 quart	
E-18	WT	8	-	-	1 quart	Poly Precipitator

NOTES:

SOL. = Solubility
PPM = Parts Per Million
S = Soluble
"-" = negative result
"++" = strong positive result
OX = Oxidizer strip test
I/L = Insoluble/Lighter
PS = Partially Soluble
"+" = moderate positive result
lb. = pound
ml = milliliter
WT = Water Thickens (possible flocculating agent)

Table 3
SMALL CONTAINER HAZARD CATEGORIZATION DATA

General Die Casting
Detroit, Michigan
03/13/92 - 03/11/93

SAMPLE ID	WATER SOL.	pH	OX	CYANIDE (PPM)	CONTAINER SIZE	MATERIAL (if known)
E-19	S	8	-	-	1 quart	
E-20	WT	8	-	-	1 quart	
E-21	S	11	-	-	< 1 quart	
E-22	PS	7	-	≤ 1	16 ounce	
E-23	S	1	++	-	1 quart	
E-24	WT	8	-	-	1 quart	
E-25	S	8	-	-	1 quart	Poly Precipitator
E-26	PS	6	-	-	< 1 quart	
E-27	S	1	-	-	50 ml	
E-28	S	7	-	-	< 1 quart	
E-29	PS	7	-	-	< 1 quart	
E-30	WT	9	-	-	5 ml	
E-31	WT	11	-	-	5 ml	
E-32	S	9	-	-	5 ml	
E-33	S	8	-	-	5 ml	
E-34	PS	1	-	-	25 lb. bag	
E-35	PS	7	-	-	25 lb. bag	
E-36	WT	7	-	-	5 gallon	Cation Exchange Resin

NOTES:

SOL. = Solubility
PPM = Parts Per Million
S = Soluble
"-" = negative result
"++" = strong positive result
ml = milliliter
WT = Water Thickens (possible flocculating agent)
OX = Oxidizer strip test
I/L = Insoluble/Lighter
PS = Partially Soluble
"+" = moderate positive result
lb. = pound

Table 4
SMALL CONTAINER BULK TABLE

General Die Casting Site
Detroit, Michigan
03/13/92 - 03/11/93

WASTE STREAM	CONTAINERS PLACED IN WASTE STREAM	COMMENTS
Acid Liquids	E-3,9,11,15,27, and Sump 13	Bulked with Tank 3
Base Neutral Liquids	E-8,12,13,17,21,26,28, 29,32, and 33	Bulked with Tank 8
Organic Liquids	E-1,2, and 4	Bulked in a 17H drum
Base Neutral Solids	E-5,7,25,34, and 35	Bulked in a 17H drum
Resin and Flocculent	E-16,18,19,20,24,30,31, and 36	Bulked in E-36 bucket
Cyanides	E-22	Bulked with Tank 4
Strong Acid Oxidizer	E-14 and 23	Bulked with Tank 6
Inorganic Acid Solids	E-10	Bulked with solids
Organic Acid Solids	E-6	Bulked in a poly drum

(PVC) pipes and some metal pipes apparently used to transport solutions containing cyanide were cut and removed from these areas. The pipes were then cut into sections and temporarily staged in the empty poly vats and small containment areas east of the main treatment area to await decontamination with a power wash. PVC pipes in the west room were cut, examined, and completely removed if they contained any green solids suspected to contain cyanide. These pipes were also cut into 3-foot sections and temporarily staged in the empty vats and containment areas. A 20-cubic-yard roll-off box was procured to provide additional temporary on-site storage for the PVC piping, personal protective equipment (PPE), polypropylene plastic, and miscellaneous debris from the site.

1.5.6 Sampling of Transformers

On March 18, 1992, the oil from three electrical transformers was sampled to determine if the oil contained polychlorinated biphenyls (PCBs). The samples were shipped to an off-site laboratory for analysis. Analytical results, received on March 25, 1992, revealed that the oils contained less than 20 parts per million (ppm) of PCBs.

1.5.7 Decontaminating PVC Pipes, Vats, and Tanks

In addition to the two poly vats removed from the nickel treatment area, other containers requiring decontamination included two metal vats along the north wall of the west room and a power wash area consisting of three connected bins and two metal vats inside the east loading bay entrance (Figure 3). Vat #4 was empty, vat #3 contained frozen liquids, and vats #1 and #2 contained a green-gray solid in large chunks. Tank #11, a 55-gallon poly tank, was discovered in the southwest corner of the west room near the boiler and contained approximately 50 gallons of liquid (Figure 3).

The TAT performed hazard categorization of chemicals in the materials in these containers, and OHM personnel bulked the materials into drums according to the results of the categorization. The frozen liquid from vat #3 was placed in the trench in an attempt to thaw the liquids for bulking, using the warm water from the power spraying and decontamination operations. The metal vats were power washed in place and the rinsings were then pumped to the trench. The PVC and metal pipes, poly vats, and three poly tanks were decontaminated by power spraying with water over the trench. After being rinsed, the PVC pipes were placed in the roll-off box. The poly vats and tanks were staged along the north wall of the west room between vats #3 and #4. The rinsings were then pumped from the trench into the 2,000-gallon poly tank which had been placed beside the trench from the main treatment area. The frozen liquid was eventually bulked in two drums with floor debris from the west room (see Section 1.5.10 below). Bulking the solids from the remaining vats filled eight drums. The tanks in the main treatment area were decontaminated in place using the power sprayer after the acid liquids or base/neutral liquids had been removed (see Section 1.5.9).

1.5.8 Sampling of Roll-off Box

On March 24, 1992, three representative samples were collected from the roll-off box containing PVC pipes, PPE, polypropylene plastic, and other miscellaneous debris from the main treatment and nickel treatment areas. One sample was sent to an off-site laboratory for disposal analysis. The analytical results were received on April 2, 1992, and revealed that the waste had a pH of 4.0, total and reactive cyanides at 52 ppm and 1.9 ppm, respectively, and chromium at 13 ppm. Based on the analytical results and the fact that the PVC pipes were used in the plating operations and considered a listed waste under RCRA, 40 C.F.R. § 261.31 (F007), the PVC pipes had to be removed from the roll-off (see Section 1.5.12). On April 7, 1992, when the PVC pipes were removed from the roll-off box, a new representative composite sample from the roll-off box was collected and sent to the laboratory of Envirosafe Services of Ohio (Envirosafe) for characterization and acceptance for disposal at Envirosafe's landfill in Oregon, Ohio.

1.5.9 Tank Liquid Disposal

On March 21, 1992, the acid liquids were transported to Dynecol, Incorporated, Detroit, Michigan, for treatment. The base/neutral liquids were also shipped to Dynecol, Incorporated, on March 25, 1992, for treatment (see Section 1.5.14).

After the contents of each tank had been pumped into the Dynecol truck, the tanks were power sprayed with water and the rinsings were also pumped into the truck as part of the load. Tanks #2 and #3 were staged along with the poly vats and tanks on the north wall of the west room. After the liquid contents had been pumped, sludge was found in the bottoms of tanks #4 and #8. The sludge from tank #8 was transferred to four 30-gallon poly drums, but the sludge in tank #4 was left in the tank as the opening in the tank was not large enough to allow for removal of the sludge. The other tanks in the main treatment area were empty, except for tank #5, which was used to contain the rinse water from power washing the floors in the east and west rooms (see Section 1.5.10 below).

1.5.10 Decontaminating Floors

After the material from sumps in the west room was removed, the floor in the west room was swept, and the material was then shovelled into a drum. The floor in the west room was power washed, and the rinsings were pumped from the sumps and trench to the 2,000-gallon tank near the trench. Areas of the floor remained discolored after power washing because some materials had leached into the cement.

After the acid liquid disposal on March 21, 1992, the floor in the east room was swept, and the sweepings were added to the drums of material from the main treatment area. The floor in the east room was

power washed when the liquid disposal was completed on March 24, 1992, and the rinsings were pumped into tank #5.

1.5.11 Final Staging, Stabilization, and Demobilization

The drums generated from the site stabilization were restaged on March 25, 1992, in the west loading bay area after it was discovered the roof was leaking over the original staging area (see Figure 4 for final drum staging). Sumps #4 and #9, which were approximately 6 feet deep, were covered with polypropylene plastic to prevent water from dripping into them and refilling them, but rainwater leaking from a pipe used to drain the roof and from a hole in the roof of the west room was eventually reaching sump #9. The sumps in the west room were cordoned with yellow "Caution" tape.

To secure the building, empty metal bins and vat #1 were placed in front of two of the bay doors in the west loading bay area (Figure 4). The three west loading bay doors were also locked from the inside. Locks were installed onto the other doors, and two doors with locks were installed onto the east loading bay entrance.

The remaining sludge was secured in tank #5 prior to demobilization on March 26, 1992. The drums of materials were left on site along with the sludge for future disposal to be arranged by the PRPs. The roll-off box also remained on site until disposal was approved (see Section 1.5.12 below).

1.5.12 Containerization of PVC Pipes and Roll-off Disposal

Due to land ban restrictions, disposal of the roll-off containing PVC pipes was cost prohibitive. The PVC pipes were then restaged for disposal by the PRP. On April 7, 1992, a three-man crew from OHM was mobilized to restage the PVC pipes from the roll-off into drums and the two empty poly vats on site and to collect a new representative composite sample from the roll-off. Six drums were collected during this operation, and two empty poly vats were lined with polyethylene plastic and used to contain the remaining PVC pipes. The six drums were staged with the other drums, and the two poly vats were staged inside one of the small diked containment areas directly east of the main treatment area. The new composite sample was shipped to Envirosafe for characterization and acceptance. PPE, polyethylene plastic, and other miscellaneous debris from the site remained in the roll-off box. The analytical results indicated that pretreatment to neutralize a pH of 4.0 in the roll-off box would be necessary. On May 4, 1992, the roll-off box was transported from the site to Envirosafe in Oregon, Ohio, for pre-treatment and disposal (see Table 5 for disposal information).

1.5.13 Transformer Oil Spill Cleanup

On May 18, 1992, a representative of Gallagher-Kaiser, the industrial facility north of the GDC site, contacted the U.S. EPA EERB, Response

Table 5
WASTE DISPOSAL SUMMARY

General Die Casting Site
Detroit, Michigan
03/13/92 - 03/11/93

Waste Category	Quantity	Date	Manifest	Disposal Method	Facility, Location
Tanks 7 and 8, Hazardous Waste Liquid (NA9189)	550 Gallons	03/21/92	MI 2751001	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tank 6, Waste Acid Liquid (NA1760)	600 Gallons	03/21/92	MI 2751002	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tanks 2 and 3, Waste Acid Liquid (NA1760)	250 Gallons	03/21/92	MI 2751003	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tank 1, Waste Acid Liquid (NA1760)	60 Gallons	03/21/92	MI 2751010	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tanks 4 and 5, Hazardous Waste Liquid (NA9189)	3,672 Gallons	03/25/92	MI 2751007	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tank 9, Hazardous Waste Liquid (NA9189)	735 Gallons	03/25/92	MI 2741004	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Tank 10, Non-hazardous non-regulated material	362 Gallons	03/25/92	MI 2751005	Wastewater Treatment	Dynecol, Inc. Detroit, MI
Roll-off, Hazardous Waste Solid (NA9189)	30 cubic yards	05/04/92	MI 2751064	Type II Landfill, with Pre-treatment	Envirosafe Services of Ohio Oregon, OH

Section 1, Grosse Ile, Michigan, to report that the transformers on site had been vandalized over the weekend and the transformer cooling oil had been allowed to spill out and flow across the General Die Casting service drive west to Mt. Elliott Avenue before entering the City of Detroit combined sewer system. U.S. EPA mobilized the TAT and a four-man OHM crew to stabilize the situation and clean up the spilled oil. Upon arrival, OSC Guria and the TAT observed that only one of the three transformers had been emptied; the other two transformers were still full of cooling oil. The migration of the oil stained the asphalt and concrete between the transformers to the sewer catch basin. The OHM crew pumped the oil from the transformers to decontaminated tank #2 and a drum. The drum and tank were restaged in the west loading dock area adjacent to the drum staging area. The stained asphalt and concrete areas were power washed first with trisodium phosphate and then with water. The rinsings from both washings was pumped from the sewer catch basin to tank #5 in the main treatment area. Staining was still visible after the cleaning as the oil had leached into the asphalt.

On May 19, 1992, OSC Guria and the TAT returned to the site and collected a composite sample from the asphalt adjacent to the transformers and a composite of transformer oil now in a drum and tank #2. These two samples were sent to a lab on May 20, 1992, for PCB testing to determine if the oil in the transformers had been layered with the greatest concentrations toward the bottom. Analytical results from these samples indicated that PCBs were present at less than 20 ppm.

The facility continued to be vandalized, and on June 4, 1992, a contractor was mobilized to board up any windows or open accesses to the building. Vandalism observed included removal of copper from the empty transformers, removal of wiring from conduits in the building, and disassembly of 8-inch valves.

On July 21, 1992, the OSC, TAT, and ERCS contractor mobilized to the site and pumped the transformer oil from the temporary storage tank to 55-gallon drums. A total of seven drums were staged and labeled for transport to a fuels blending facility. On July 28, 1992, the drums were transported to Clark Processing of Dayton, Ohio, for fuels blending.

1.5.14 Standard Waste Table

A waste disposal summary for the GDC site is provided in Table 5.

1.6 Community Relations

U.S EPA policy requires a community relations plan for any removal action where on-site activities would be in excess of 4 months. Because it was anticipated that site activities would take less than 4 months, no formal community relations plan was developed. The Detroit Fire Department and neighboring industrial facilities were

contacted regarding the removal and kept informed of the progress of the site stabilization thru pollution reports.

1.7 Cost Summary

ITEP was the ERCS contractor for the General Die Casting site (Delivery Order #7460-05-217) but subcontracted the actual on-site work to OHM of Findlay, Ohio. Site activities began on March 13, 1992, and were completed on March 11, 1993. Table 6 provides an itemized listing of the ERCS contractor expenditures by the major categories of labor, equipment, materials, and subcontractors, as well as costs incurred by U.S. EPA and the TAT (TDD #'s T05-9203-009 and T05-9210-056A).

These costs are estimated, subject to audit and final definitization by U.S. EPA. The OSC Report is not intended to be a final reconciliation of all costs associated with a particular site.

2.0 EFFECTIVENESS OF REMOVAL ACTIONS

2.1 The Potentially Responsible Parties

Section 107(a) of CERCLA states that the current owner of a site is liable for all costs incurred in any removal action not inconsistent with the NCP undertaken by the U.S. EPA, subject to certain defenses set forth in Section 107(b) of CERCLA.

A Unilateral Administrative Order was issued on July 3, 1991, to the PRPs identified as Richard Shirley of General Die Casting and William Aikens of Spartan Metal Finishing. In September 1991, Mr. Shirley and his counsel held a conference with U.S. EPA representatives and asked that U.S. EPA pursue other PRPs that may be equally responsible for the conditions at the site. In January 1992, U.S. EPA issued a General Notice letter to Noranda Mines Ltd. (Norandex, Inc.) of Ontario, Canada, as an additional PRP. Based on the PRPs', Shirley and Aikens, failure to comply with the Unilateral Administrative Order (UAO) issued on July 3, 1991, and the findings of U.S. EPA and the TAT re-assessment in February 1992, an emergency site stabilization and removal was necessary at the site to remediate the threats to public health and the environment. An emergency removal was initiated with U.S. EPA Emergency Response Contract Services (ERCS), IT Corporation.

A conference that included U.S. EPA representatives, Mr. Shirley, Mr. Aikens, their counsel, and David Nash, a representative of Noranda Mines was held on March 18, 1993, concurrent with U.S. EPA removal activities. The PRPs indicated that they would agree to conduct a complete removal governed by an Administrative Order by Consent (AOC). The U.S. EPA prepared a draft AOC to include as PRPs General Die Casting, William Aikens, and Noranda Mines Ltd., for completion of removal activities.

Table 6

SUMMARY OF TOTAL ESTIMATED REMOVAL COSTS

General Die Casting Site
Detroit, Michigan
03/13/92 - 03/11/93

EXTRAMURAL COSTS:	
ERCS Contractor (1)	$ 99,772.35
Labor	45,360.46
Equipment	4,922.51
Materials	8,581.86
Transportation	788.83
Disposal	9,641.03
Analysis	6,406.68
Subcontractors	24,070.98
TAT Contractor (2)	$ 27,518.53
Subtotal:	$127,290.88
INTRAMURAL COSTS:	
U.S. EPA (3)	
Direct Costs	$ 4,125.00
Indirect Costs	7,128.50
Subtotal:	$ 11,253.50
ESTIMATED TOTAL PROJECT COSTS	$138,544.38
PROJECT CEILING	$393,610.00

(1) Source: ERCS Contractor, IT Corporation, Delivery Order #7460-05-217, Cost Summary Report Dated May 12, 1993. (Appendix 2-H)

(2) Source: TDD #T05-9203-009 ($303.79), TDD #T05-9210-056A ($27,214.74), and DPO Financial Management Summary dated August 8, 1993.

(3) Source: Incident Obligation Log (IOL) for on site costs thru 5/19/92.

Any indication of specific costs incurred at the site is only an approximation, subject to audit and final definitization by the U.S. EPA. The OSC Report is not meant to be a final reconciliation of the costs associated with a particular site.

Negotiations over the AOC continued for several months until it was determined that the PRPs would not enter into an agreement to clean up the site. On February 4, 1993, a UAO superseding the UAO issued July 3, 1991, was issued to the PRPs requiring them to complete removal activities. The PRPs requested a meeting with U.S. EPA representatives to work out a firm voluntary agreement. On March 1, 1993, GDC signed an AOC to complete removal actions at the site. This AOC became effective on March 16, 1993, and superseded and nullified all previous Administrative Orders issued to the PRPs.

2.2 State and Local Agencies

The MDNR could not provide the necessary funding to perform the time-critical removal and referred the site to the U.S. EPA and provided PRP information.

2.3 Federal Agencies and Special Teams

U.S. EPA was the only Federal agency involved in removal actions at the General Die Casting site. All monetary resources for the removal action were provided by U.S. EPA under CERCLA. Actions taken by U.S. EPA effectively mitigated the threats posed by the hazardous substances abandoned at the General Die Casting facility.

2.4 Contractors, Private Groups, and Volunteers

The ERCS subcontractor, OHM, and the Region V TAT contractor, Ecology and Environment, conducted on-site activities in a timely and efficient manner. Site stabilization was completed quickly, preventing any release of hazardous substances from tanks or vats. The tank liquids were sampled immediately and accepted quickly for disposal, and floor solids and other wastes were containerized, and staged on-site for PRPs to complete removal activities.

3.0 DIFFICULTIES ENCOUNTERED

3.1 Condition of Roof

The holes in the roof of the facility, most notably in the west room and west side of the building, were presumably the result of the removal of roof vents and deterioration. During precipitation events, water leaked in through these holes onto the first drum staging area necessitating a restaging of the drums to the west loading bay area on March 25, 1993 (see Figure 4 for final drum staging).

Water leaking into the building from holes in the roof and also from a cut pipe in the west room was observed. This pipe was evidently used to drain the center of the roof. The water from both sources filled sumps #4 and #9 in the west room. These sumps, which were approximately 6 feet deep, were shovelled and pumped initially in the site stabilization but had to be pumped again and covered with

polyethylene plastic to prevent water from flowing into and filling them.

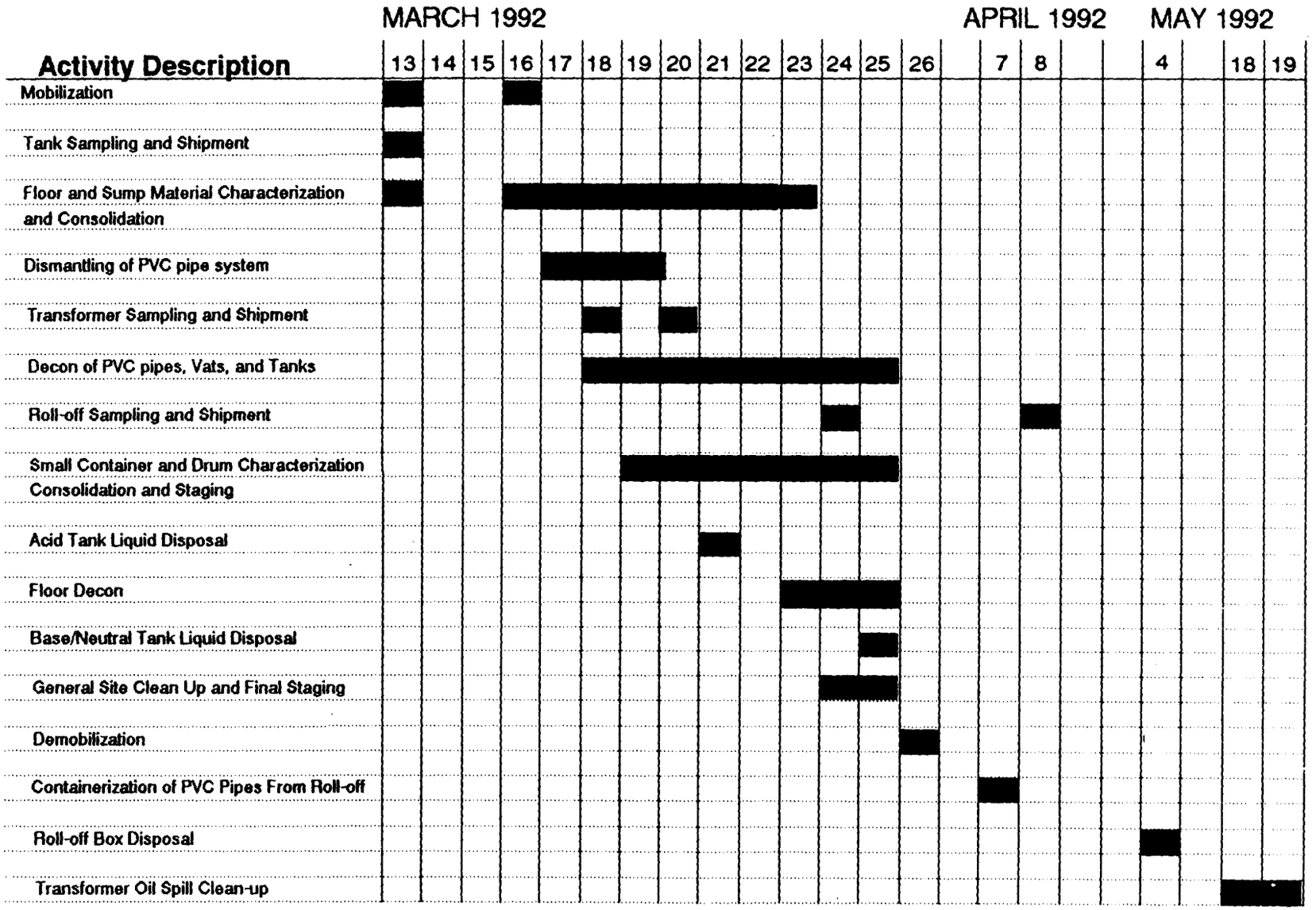
3.2 Roll-off Box Disposal

Disposal of the waste in the roll-off box was delayed during analysis of representative samples collected to determine: 1) whether the PVC pipes could be included with the waste contained in the roll-off box; and 2) whether, excluding the PVC pipes, the waste in the roll-off box could be accepted for disposal at Envirosafe Services of Ohio (ESO) because of its pH of 4.0. It was determined that the PVC pipes were considered a listed waste under RCRA, 40 C.F.R. § 261.31 (F007), and the PVC pipes were removed from the waste in the roll-off box on April 17, 1992. The remainder of the contents of the roll-off box was accepted and transported for pre-treatment and disposal at ESO on May 4, 1992.

4.0 RECOMMENDATIONS

The first phase, including site stabilization and removal of corrosive liquids, cyanide-contaminated solids, and plating solutions and wastes, was completed on May 19, 1992. The next phase, tentatively to be completed by the PRPs, involves the characterization and disposal of containerized waste and sludge, characterization and an extent-of-contamination study of soil south of the building and under the building which may necessitate the raising of the building and remediation of contamination affected by the GDC facility.

ATTACHMENT A


MARCH 1992
APRIL 1992
MAY 1992
Activity Description
13
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26
7
8
4
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19
Mobilization
Tank Sampling and Shipment
Floor and Sump Material Characterization
and Consolidation
Dismantling of PVC pipe system
Transformer Sampling and Shipment
Decon of PVC pipes, Vats, and Tanks
Roll-off Sampling and Shipment
Small Container and Drum Characterization
Consolidation and Staging
Acid Tank Liquid Disposal
Floor Decon
Base/Neutral Tank Liquid Disposal
General Site Clean Up and Final Staging
Demobilization
Containerization of PVC Pipes From Roll-off
Roll-off Box Disposal
Transformer Oil Spill Clean-up